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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/694,433

10/27/2003

Sumesh Mani K. Thiyagarajan

15436.247.7.1

8936

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06/25/2004

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EXAMINER

EVERHART, CARIDAD

ART UNIT

PAPER NUMBER

2825

DATE MAILED: 06/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

5

Office Action Summary

Application No.

10/694,433

Applicant(s)THIYAGARAJAN, SUMESH MANI
K.**Examiner**

Caridad M. Everhart

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11-24-2003</u> . | 6) <input type="checkbox"/> Other: ____. |

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,5 , 9, 10,12, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Vurgaftman, et al (US 2003/0169787A1).

Vurgaftman discloses a distributed feedback laser(paragraph 0002). There is a die having front and rear cleaved facets with the front cleaved facet having an antireflective coating (second half of paragraph 0010 and claim 29 disclose the antireflection layer as well as paragraph 0042, which also discloses the cleaved facets). There is a laser stripe(Fig. 1 and paragraph 0045). The stripe is at an angle to the antireflection layer(paragraphs 0014, 0015, and 0111). The disclosure of the angle with respect to the mirrors is understood to refer also to the antirelection layers, because it is taught in the paragraphs cited before that the layers can be mirror or antireflection layers. Paragraph 0095 discloses that the grating is perpindicular with respect to the laser stripe. That the grating is coupled to the laser stripe is taught by the disclosure that the grating modulates the radiation from the laser(paragraph 0015). The process steps include cleaving a substrate, epitaxially growing a layer, defining an angle for the grating with respect to the cleavage plane, and forming a laser stripe which will be

perpendicular to the grating. The choosing of the angle for the grating and the forming of the stripe, which is formed such that the grating will be perpendicular to the stripe are disclosed in the portions of Vurgaftman cited before. The steps of cleaving the substrate and of epitaxial growth are disclosed in paragraphs 0102 and 0124. That the antireflection coating is a single layer is interpreted from the disclosure of Vurgaftman of an antireflection coating, as it is implied that an antireflection coating is a single coating layer. That the laser taught by Vurgaftman is a heterostructure is implied in paragraph 0102 in which the structure is described as a quantum well structure and the material layers are described.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2-4, 6-8, 11-12, 14-24, and 26-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vurgaftman, et al as applied to claim 1 above.

Vurgaftman is silent with respect to the limitations of the dependent claims such as the effective grating coefficient and the minimum side mode suppression ratio selection.

Although Vurgaftman is silent with respect to the effective grating coupling coefficient values recited, it would have been obvious to one of ordinary skill in the art at the time of the invention to have chosen the recited values because Vurgaftman teaches this coefficient(paragraph 0014) and it is a variable of the art which one of ordinary skill in the art would have been able to choose.

Although Vurgaftman is silent with respect to the choosing of the side mode suppression ratio, it would have been obvious to one of ordinary skill in the art at the time of the invention to choose the side mode suppression ratio as recited in the claims because Vurgaftman teaches that this ratio has an effect on the performance of the laser(paragraph 0019 and 0123), so that one of ordinary skill in the art would be able to choose the side mode suppression ratio.

With respect to the power ratio, it would have been obvious to one of ordinary skill in the art at the time of the invention to have optimized this value because Vurgaftman teaches optimizing power(paragraph 0105) and because this ratio is a variable of the art which one of ordinary skill in the art would have been able to determine.

With respect to the plurality of lasers, it would have been obvious to one of ordinary skill in the art at the time of the invention to have formed a plurality of lasers because Vurgaftman teaches an array of lasers(Fig. 10 and Fig. 11 and paragraphs 0034 and 0035) . With respect to the steps of determining the effects of the tilt angle on the array, Vurgaftman teaches this in paragraf 0129.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vurgafman et al as applied to claim 10 above, and further in view of Lo, et al (US 2002/0131465A1).

Vurgafman is silent with respect to MOCVD for the formation of the laser material.

Lo discloses either molecular beam epitaxy or MOCVD may be used for the formation of the laser material.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used either one of MBE or MOCVD for the formation of the laser material because Vurgafman teaches epitaxial deposition of the laser material and both MBE and MOCVD are known in the art for epitaxial deposition.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caridad M. Everhart whose telephone number is 571-272-1892. The examiner can normally be reached on Monday through Fridays 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2825

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Caridad Everhart
CARIDAD EVERHART
PRIMARY EXAMINER
